

Abstract

New devices having horizontally-disposed nanofabric articles and methods of making same are described. A discrete electro-mechanical device includes a structure having an electrically-conductive trace. A defined patch of nanotube fabric is disposed in spaced relation to the trace; and the defined patch of nanotube fabric is electromechanically deflectable between a first and second state. In the first state, the nanotube article is in spaced relation relative to the trace, and in the second state the nanotube article is in contact with the trace. A low resistance signal path is in electrical communication with the defined patch of nanofabric. Under certain embodiments, the structure includes a defined gap into which the electrically conductive trace is disposed. The defined gap has a defined width, and the defined patch of nanotube fabric spans the gap and has a longitudinal extent that is slightly longer than the defined width of the gap. Under certain embodiments, a clamp is disposed at each of two ends of the nanotube fabric segment and disposed over at least a portion of the nanotube fabric segment substantially at the edges defining the gap. Under certain embodiments, the clamp is made of electrically-conductive material. Under certain embodiments, the contact between the nanotube patch and the trace is a non-volatile state. Under certain embodiments, the contact between the nanotube patch and the trace is a volatile state. Under certain embodiments, the at least one electrically conductive trace has an interface material to alter the attractive force between the nanotube fabric segment and the electrically conductive trace.